Emissions from private jets are soaring

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The popularity of private aeroplanes, the distance covered by flights and associated greenhouse-gas production are all on the rise.

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More private jets are taking to the skies now than there were four years ago.Credit: Joan Valls/ Urbanandsport/NurPhoto via Getty

A global analysis of private-jet use shows that the number of aircraft and trips and the distance aeroplanes covered have all soared over the past five years, exacerbating the sector's carbon dioxide emissions. Between 2019 and 2023, the number of private flights rose to more than four million a year, increasing emissions by 46%. The study, which was published on 7 November in *Communications Earth and Environment*[1], found that private flights produced 15.6 million tonnes of CO_2 in 2023, and identified events that trips were concentrated around, including the COP28 climate summit in Dubai last year.

This work "is so important in the light of global warming and the absolute inequalities that we have across the world", says Milan Klöwer, who researches the impact of aviation on global warming at the University of Oxford, UK. "While private aviation is obviously a small share of commercial aviation, it really shows how

disproportionately they're just burning the planet."

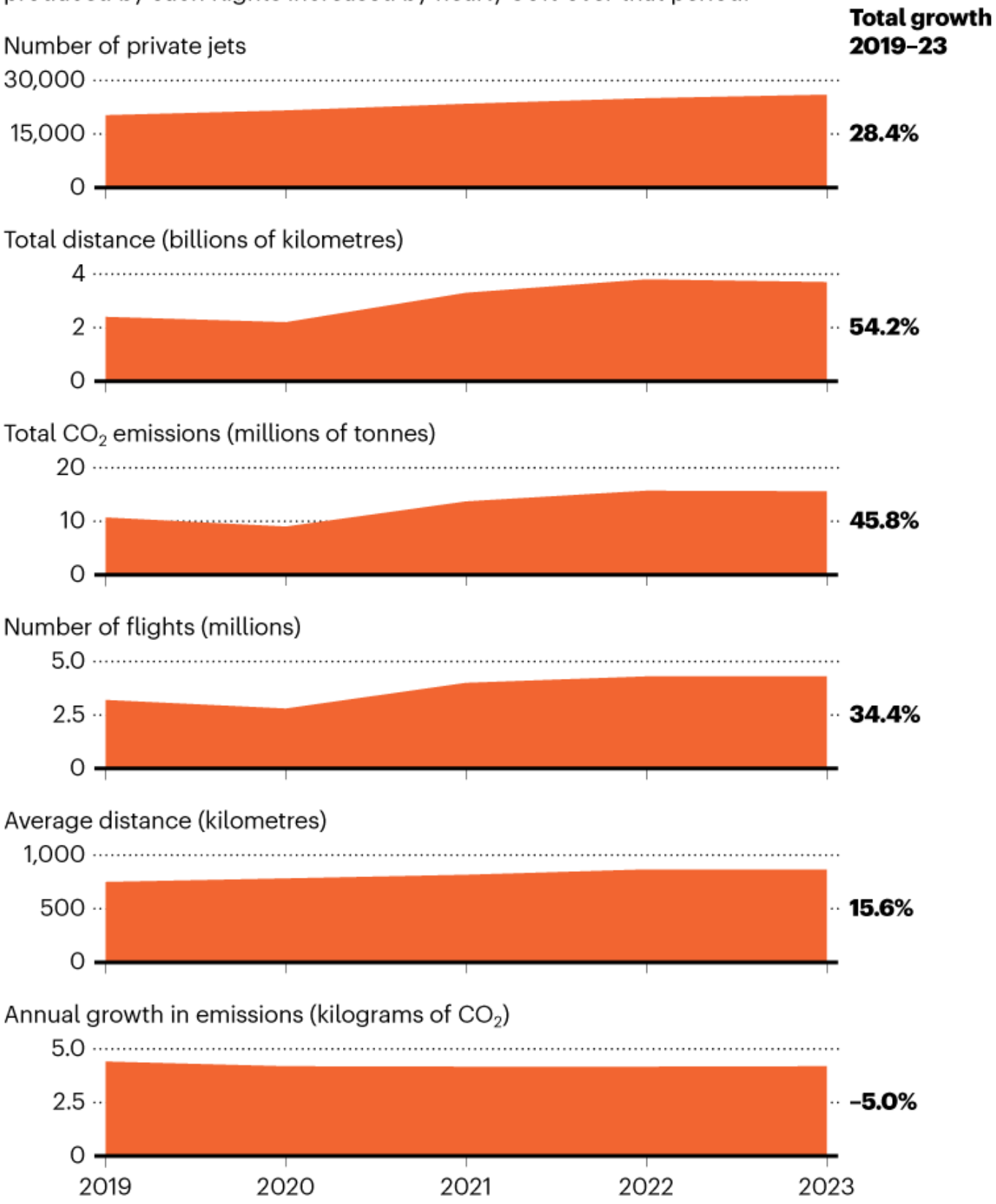
The cost of luxury

Researchers have explored the impacts of air travel on climate change. But few studies have focused on the global scale and climate cost of private jets, which is one of the most energy-consuming ways to fly. "Per hour, a large private aircraft can emit more than an average person emits per year," says study co-author Stefan Gössling, who studies transport behaviour and climate change at Linnaeus University in Kalmar, Sweden.

Gössling and his colleagues collected private aircraft logs, which provide real-time location information for all flights, from 2019 to 2023. Flight-time data were then "associated with aircraft model-specific fuel use to determine emissions", Gössling says.

THE JET SET

The number of private jets and the distance the aeroplanes covered rose substantially between 2019 and 2023. Moreover, carbon dioxide emissions produced by such flights increased by nearly 50% over that period.



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Their analysis showed that the number of private jets increased by 28.4% over the period, to almost 26,000 jets in 2023. The total distance the planes flew also increased. And, although the total CO_2 emissions increased from 10.7 million to 15.6 million tonnes, the average emissions per kilometre decreased, which could be due to more efficient jet systems (see 'The jet set').

Nearly 50% of the flights were shorter than 500 kilometres; such distances, Klöwer says, could have been done by train or by car. And many journeys — as well as emissions — were clustered around major world events. For example, 172 of the 595 private planes that flew to the 2023 World Economic Forum in Davos, Switzerland, were also seen at the Cannes Film Festival in France that year. COP28 was linked to 291 private flights, releasing an estimated 3,800 tonnes of CO_2.

Worrying trend

Although the scale of emissions from private flights is small compared with the emissions from other sources, the study argues that the rate at which they are increasing is concerning. "I have already heard many colleagues say that 15.6 million tonnes is nothing in global comparison, and that we can ignore the sector," says Gössling. "I think we should see it the other way around. If individuals get to emit thousands of tonnes without consequences, why should anybody else reduce their emissions?"

A cleaner future for flight — aviation needs a radical redesign

Klöwer agrees that the global rise in private-jet use is "not sustainable", adding that stricter regulations would help to reduce the incentives around private flight. "Carbon is a cost, and this cost should be internalized," says Gössling. "I think every country could put taxes on every private jet that lands or takes off," Klöwer says, although he acknowledges that such rules would be "politically very, very difficult".

Klöwer is keen for future studies to explore non-CO_2 emissions, such as methane and sulfur dioxide, produced by flights. He says that, although calculating these emissions would be challenging, such research could help to provide a clearer picture of how individual jets contribute to climate change. "You could really pin down people and say … 'this is the amount of warming you are responsible personally for'."

References